

Appl. No. : 10/029,556
Filed : December 20, 2001

REMARKS

In response to the Office Action, Applicant respectfully requests the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following comments.

Discussion of Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

In the Office Action, the Examiner rejected Claim 24 under 35 U.S.C. § 112, second paragraph as failing to set forth the subject matter which applicant regard as their invention. Applicant respectfully submits that this has been corrected by the above-amendments and respectfully requests the Examiner to remove this rejection.

Discussion of Claim Rejections Under 35 U.S.C. §§ 102(b) and (e) and 103(a)

In the Office Action, the Examiner rejected Claim 23 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,390,270, to Hanzawa (hereinafter "Hanzawa"). The Examiner rejected Claims 19 and 23-25 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,533,469 to Nakamura (hereinafter "Nakamura"). The Examiner rejected Claims 2-4, 14-16, and 20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,692,081 to Takahashi (hereinafter Takahashi) in view of Nakamura. Claims 2-10, 17, 18, 21, and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hanzawa in view of Takahashi. Claims 11-13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hanzawa and Takahashi in view of U.S. Patent No. 5,751,875 to Edwards (hereinafter "Edwards").

One embodiment of the present invention provides an optical coupling module capable of reducing polarization dependent loss (PDL). The optical coupling module of the present invention can be used for an optical coupler, optical divider, optical isolator, optical circulator, optical multiplexer or optical demultiplexer, and permits light to be transmitted from at least one optical fiber to a *plurality of optical fibers* associated therewith or vice versa. To provide the holes for the fibers, each ferrule of the applicants' optical coupling module is made of synthetic resin. The resin ferrule can be formed by using a mold, and it is also possible to form through holes simultaneously with the molding. In the case of a zirconia ferrule, by contrast, it is in

general difficult to form a plurality of holes in the ferrule simultaneously with the molding. If the ferrule is formed by sintering instead, a single through hole could be formed in the ferrule, but it is still difficult to form a plurality of holes with a narrow pitch. Since the ferrule of the present invention is formed using synthetic resin, *a plurality of fiber holes can be formed at desired locations* with a narrow pitch and with high precision, and also the fiber holes can be formed simultaneously with the molding (i.e., in a short time). As a consequence of the narrow pitch, the polarization dependent loss (PDL) can be greatly reduced.

Claim 23 recites, among other limitations:

a first ferrule made of a synthetic resin, for supporting the first end of said first optical fiber, said first ferrule including a first body with a first front end face and a first rear end face, and at least one first through hole formed in the first body, the first through hole extending between the first front and rear end faces and having a first front portion into which the first end of said first optical fiber is received, and a first rear portion being larger than the first front portion; and

a second ferrule made of a synthetic resin, for supporting each of the second ends of said second optical fibers, said second ferrule including a second body with a second front end face and a second rear end face, and *a plurality of second through holes formed in the second body*, each of the second through holes extending between the second front and rear end faces and having a second front portion into which the second end of a corresponding one of said second optical fibers is received, and a second rear portion being larger than the second front portion.

Applicant respectfully submits that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *See* M.P.E.P. § 2131. Furthermore, to establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *See* M.P.E.P. § 2143.03. Applicant respectfully submits that the cited references fails to teach or suggest at least the above-claim limitations.

Hanzawa generally discloses a ferrule made of resin. However, the optical coupling module disclosed in Hanzawa merely serves to optically couple one optical fiber to another. Thus, Hanzawa does not disclose a plurality of holes in a second ferrule made of a synthetic resin. It is noted that Nakamura also discloses a ferrule made of resin. However, like Hanzawa, the optical coupling module disclosed in Nakamura merely serves to optically couple one optical

Appl. No. : **10/029,556**
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fiber to another. Thus, Nakamura also does not disclose a plurality of holes in a second ferrule made of a synthetic resin.

Furthermore, Applicant respectfully submits that at least these limitations is not taught or suggested by Takahashi. Takahashi discloses a ferrule for supporting optical fibers. Takahashi's ferrule is, however, made of a sintered zirconia ceramic material and thus is not equivalent to the applicants' ferrule made of synthetic resin. Also, Takahashi's ferrule does not have a plurality of through holes formed therein for respective fibers. Since the references do not teach or suggest in isolation or in combination at least the above-limitations, Applicant respectfully submits that the Claim 23 is in condition for allowance. Furthermore, since Claims 2-22, 24, and 25 each depend on Claim 23, Applicant respectfully submits that this claim is allowable for at least the reasons discussed above and the subject matter of their own limitations.

Summary

Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. Accordingly, amendments to the claims for patentability purposes, the reasons therefore, and arguments in support of the patentability of the pending claim set are presented above. Any claim amendments which are not specifically discussed in the above remarks are not made for patentability purposes, and the claims would satisfy the statutory requirements for patentability without the entry of such amendments. In addition, such amendments do not narrow the scope of the claims. Rather, these amendments have only been made to increase claim readability, to improve grammar, and to reduce the time and effort required of those in the art to clearly understand the scope of the claim language. In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested. If the Examiner has any questions which may be answered by telephone, he is invited to call the undersigned directly.

Appl. No. : 10/029,556
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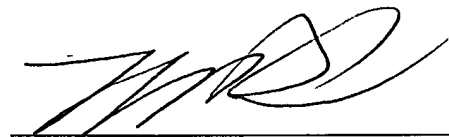
Respectfully submitted,

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Dated: _____

11/26/03

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